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JAVA APPLET PROGRAMMING LANGUAGE TUTORIAL

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Chapter-1

Learn Applet in Java

WHAT IS APPLLET IN JAVA LANGUAGE:-



- ◉ Applet

An applet is a Java program that runs in a Web browser. An applet can be a fully functional Java application because it has the entire Java API at its disposal.

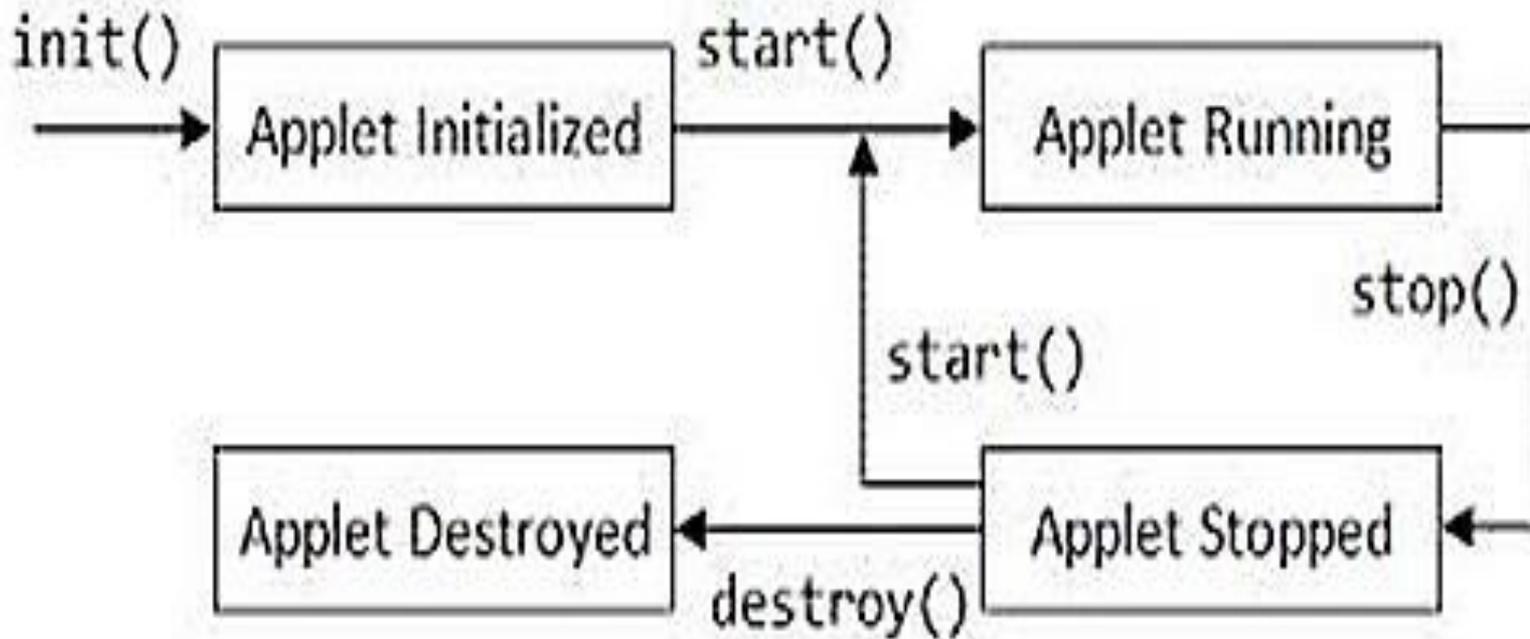
- ◉ An applet is a Java program that can be embedded into a web page. It runs inside the web browser and works at client side. An applet is embedded in an HTML page using the APPLET or OBJECT tag and hosted on a web server.
- ◉ Applets are used to make the web site more dynamic and entertaining.

APPLET AND APPLICATION :-

There are certain differences between Applet and Java Standalone Application that are described below:

1. An applet is a Java class that extends the `java.applet.Applet` class.
2. A `main()` method is not invoked on an applet, and an applet class will not define `main()`.
3. Applets are designed to be embedded within an HTML page.
4. When a user views an HTML page that contains an applet, the code for the applet is downloaded to the user's machine.
5. A JVM is required to view an applet. The JVM can be either a plug-in of the Web browser or a separate runtime environment.
6. The JVM on the user's machine creates an instance of the applet class and invokes various methods during the applet's lifetime.
7. Applets have strict security rules that are enforced by the Web browser. The security of an applet is often referred to as sandbox security, comparing the applet to a child playing in a sandbox with various rules that must be followed.

LIFE CYCLE OF APPLET :-



APPLET LIFE CYCLE STATE:

◉ Initial State

When a new *applet* is born or created, it is activated by calling *init()* method. At this stage, new objects to the *applet* are created, initial values are set, images are loaded and the colors of the images are set. An *applet* is initialized only once in its lifetime. It's general form is:

```
public void init()
{
    //Action to be performed
}
```

◉ Running State

An *applet* achieves the running state when the system calls the *start()* method. This occurs as soon as the *applet* is initialized. An *applet* may also start when it is in idle state. At that time, the *start()* method is overridden. It's general form is:

```
public void start()
{
    //Action to be performed
}
```

◉ Idle State

An *applet* comes in idle state when its execution has been stopped either *implicitly* or *explicitly*. An *applet* is *implicitly* stopped when we leave the page containing the currently running applet. An *applet* is *explicitly* stopped when we call *stop()* method to stop its execution. It's general form is:

```
public void stop()
{
    //Action to be performed
}
```

DIFFERENT METHODS THAT ARE USED IN APPLLET LIFE CYCLE:

- ◉ **init** – This method is intended for whatever initialization is needed for your applet. It is called after the param tags inside the applet tag have been processed.
- ◉ **start** – This method is automatically called after the browser calls the init method. It is also called whenever the user returns to the page containing the applet after having gone off to other pages.
- ◉ **stop** – This method is automatically called when the user moves off the page on which the applet sits. It can, therefore, be called repeatedly in the same applet.
- ◉ **destroy** – This method is only called when the browser shuts down normally. Because applets are meant to live on an HTML page, you should not normally leave resources behind after a user leaves the page that contains the applet.
- ◉ **paint** – Invoked immediately after the start() method, and also any time the applet needs to repaint itself in the browser. The paint() method is actually inherited from the java.awt.

SIMPLE EXAMPLE TO CREATE AN APPLLET PROGRAM

To create an Applet program follow the steps:

1. Create a Java file containing Applet Code and Methods described above
2. Create a HTML file and embed the .Class File of the Java file created in the first step.
3. Run Applet using either of the following methods
 - Open the HTML file in java enabled web browser
 - Use AppletViewer tool(used only for testing purpose)

APPLET EXAMPLE :-

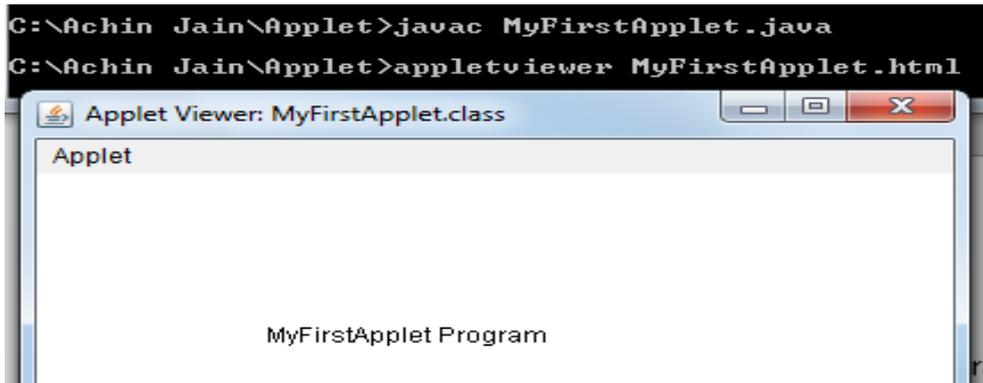
//Code of MyFirstApplet.java

```
import java.applet.*;
import java.awt.*;
public class MyFirstApplet extends Applet
{
    public void paint(Graphics g)
    {
        g.drawString("MyFirstApplet Program",100,100);
    }
}
```

//Code of MyFirstApplet.html

```
<html>
<title>MyFirstApplet</title>
<applet code="MyFirstApplet.class" width=400 height=400>
</applet>
</html>
```

//Use Appletviewer Tool



SIMPLE EXAMPLE OF APPLLET BY APPLLETVIEWER TOOL:

To execute the applet by appletviewer tool, create an applet that contains applet tag in comment and compile it. After that run it by: appletviewer First.java. Now Html file is not required but it is for testing purpose only.

```
//First.java
```

```
import java.applet.Applet;
```

```
import java.awt.;
```

```
public class First extends Applet
```

```
{
```

```
    public void paint(Graphics g)
```

```
    {
```

```
        g.drawString("welcome to applet",150,150);
```

```
    }
```

```
}
```

```
/*
```

```
<applet code="First.class" width="300" height="300">
```

```
</applet>
```

```
*/
```

◉ To execute the applet by appletviewer tool, write in command prompt:

```
c:\>javac First.java
```

```
c:\>appletviewer First
```

PAINT() METHOD IN APPLET:-

Within the method `paint()` we will call the `drawString()` method to print a text message in the applet window.

◉ *when the paint() method is invoked?*

The method `paint()` is automatically called whenever there is a need to display an applet window, this need could arise in certain situations -When an applet window is brought up on the screen for the first time.

When an applet window is brought up on the screen from a minimized state, this leads the redrawing of the applet window and hence the `paint()` method is automatically called.

When an applet window is stretched to a new size, this leads to redrawing of the applet window to a new size and hence the `paint()` method is automatically called.

◉ *Signature of paint() method*

public void paint(Graphics g) The method `paint()` gives us access to an object of type `Graphics` class. Using the object of the `Graphics` class, we can call the `drawString()` method of the `Graphics` class to write a text message in the applet window. `Graphics` class also provide various methods to draw shape.

PAIN T METHOD SYNTAX AND EXAMPLE:-

- ◉ Syntax:

```
public void paint(Graphics <object name>)  
{  
    Statement;  
    statement;  
}
```

- Eg:

```
public void paint(Graphics g)  
{  
    drawString("hello",10,10);  
}
```

- Note:

- ◉ Graphics class use AWT(Abstract Windowing Toolkit) package.
- ◉ Graphics class also use various methods like drawLine(),drawRect(),drawOval(),drawPolygon(),... etc.

APPLET CLASS METHODS AND USE:-

➤ Init →

Init method use as constructor use for initialize applet object and elements. Init method call automatically after applet execution.

Eg.:

```
public void init()  
{  
    STATEMENT;  
}
```

THANK YOU